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09/966,635	09/28/2001	Jin-Meng Ho	TI-32377	5060

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NG, CHRISTINE Y

ART UNIT	PAPER NUMBER
2616	

DATE MAILED: 06/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	09/966,635	HO ET AL.
	Examiner	Art Unit	
	Christine Ng	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>03 April 2006</u>.

2a)☒ This action is **FINAL.**   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>12-14,17-31 and 54-65</u> is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>12-14,17-19,21,22,27-30 and 54-65</u> is/are rejected.

7)☒ Claim(s) <u>20,23-26 and 31</u> is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>28 September 2001</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)☐ All   b)☐ Some * c)☐ None of:

   1.☐ Certified copies of the priority documents have been received.

   2.☐ Certified copies of the priority documents have been received in Application No. _____.

   3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
   Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2.   Claims 12, 14, 17-19, 27, 28, 30 and 54-65 are rejected under 35 U.S.C. 103(a)

as being unpatentable over U.S. Patent No. 5,517,501 to Jacquet et al in view of U.S.

Patent No. 6,157,627 to Olofsson et al.

Referring to claim 12, Jacquet et al disclose a method for adaptively controlling

network traffic (Figure 1, between Pa-Pc) on a communications network with a shared

communications medium (Figure 1, MT), comprising (Figure 6):

(1) Determining traffic category permission probabilities ($p_i(t)$). A series of

quantities of probability $p_i(t)$ is maintained, equal in number to the number of n of priority

levels to be managed (i goes from 1 to n) within the terminal. Refer to Column 8, lines

20-28.

(2) Calculating an overall permission probability, PP (an associated quantity

$p_i(t)$). For a packet stored in the upstream buffer, its priority level i is associated with a

corresponding $p_i(t)$. Refer to Column 8, lines 37-41.

(3) Contending for access to the shared communications medium. Refer to

Column 8, lines 37-67.

(4) Determining updated traffic category permission probabilities. Each quantity

$p_i(t)$ is maintained in accordance with observations by means of a law or re-updating

function q_i, which decreases pi(t) in the event of an abundance of collision slots and

increases pi(t) in the event of an abundance of vacant slots. Refer to Column 9, lines 6-

19.

(5) Repeating steps (2)-(3) until buffered traffic is transmitted. Jacquet et al

disclose that for each packet stored in the upstream buffer, the packet is transferred to

the transmission/reception manager using the method of Figure 6.

Jacquet et al do not specifically disclose that the traffic category permission

probabilities are updated each time.

However, Jacquet et al disclose in Figure 4 in another embodiment of the

invention that every time a collision occurs, the integer E is updated using a series of

observations (steps 405,406,410,420,430). As the integer E approaches '0', it denotes

that there are an abundance of vacant slots so that transmission can be attempted

again. Refer to Column 5, line 43 to Column 6, line 33. Therefore, it would have been

obvious to one of ordinary skill in the art at the time the invention was made to include

that the traffic category permission probabilities are updated each time. One would be

motivated to doing so because the traffic category permission probabilities are updated

based on observations and the observations must be made periodically in order to

inform the units of the number of collision slots and vacant slots. If there are an

abundance of vacant slots, it will be easier for the unit to transmit packets onto the

shared medium. Refer to Column 9, lines 6-19.

Wherein there are a plurality of traffic categories, and wherein a traffic category permission probability ($p_i(t)$) is assigned for each traffic category. Refer to Column 8, lines 25-28.

Jacquet et al also do not disclose that the calculating an overall permission probability, PP, is a summation of the traffic category permission probabilities assigned to each traffic category.

Olofsson et al disclose in Figure 4 that for each channel structure a)-f), an arrival probability is assigned. Additionally, an overall arrival probability (total arrival probability) is assigned to each channel structure a)-f) based on the summation of the arrival probabilities of each channel that the channel can include. For example, channel structure c) can include structures a) and b), so its total arrival probability is the summation of a(0.5), b(0.2), and c(0.1), for a total arrival probability of 0.6. Refer to Column 3, line 45 to Column 4, line 29. The total arrival probability is used to prioritize the channel structures, with the lower priority channels allocated to service incoming calls before higher priority channels. Refer to Column 4, line 58 to Column 5, line 11. Therefore, it would be been obvious to one of ordinary skill in the art at the time the invention was made to include that the calculating an overall permission probability, PP, is a summation of the traffic category permission probabilities assigned to each traffic category; the motivation being that by calculating an overall probability, the order in which traffic is controlled can be more fairly controlled, since it accounts for all the traffic category probabilities instead of one.

Referring to claim 14, Jacquet et al disclose in Figure 1 that the shared communications medium (MT) is shared by a plurality of stations (Pa-Pc), and wherein determining traffic category permission probabilities $p_i(t)$ comprises each station assigning the traffic category permission probabilities. Each quantity $p_i(t)$ is maintained in accordance with observations by means of a law or re-updating function q_i, which decreases pi(t) in the event of an abundance of collision slots and increases pi(t) in the event of an abundance of vacant slots; the collision slots and vacant slots are measured by the station itself. Refer to Column 9, lines 6-19.

Referring to claim 17, Jacquet et al disclose in Figure 1 that the shared communications medium (MT) is shared by a plurality of stations (Pa-Pc), and wherein the calculating overall permission probability step is performed by station with traffic to transmit. Each station with traffic in its upstream buffer determines a packet's associated pi(t). Refer to Column 8, lines 37-41.

Referring to claim 18, Jacquet et al disclose in Figure 6 that the contending for access step comprising determining if a contending station is permitted to transmit (has data in its upstream buffer), and sending traffic from an appropriate traffic category (high priority category). Refer to Column 8, lines 37-67.

Referring to claim 19, Jacquet et al disclose in Figure 6 that the determining step comprises generating a random number X (g(t)); and granting the contending station permission to transmit only if the random number, X, is less than or equal to the overall permission probability, PP (an associated quantity $p_i(t)$). Refer to Column 8, lines 20-49.

Referring to claim 27, Jacquet et al disclose that determining updated traffic category permission probabilities (pi(t)) is asserted at regular time intervals (every time an observation is made). Any observation or series of observations brings about an updating of $p_i(t)$. Refer to Column 9, lines 6-19.

Referring to claim 28, Jacquet et al disclose in Figure 1 that the shared communications medium (MT) is shared by a plurality of stations (Pa-Pc), and wherein determining traffic category permission probabilities ($p_i(t)$) is performed at each station with traffic to transmit. Each quantity $p_i(t)$ is maintained in accordance with the observations by means of a law or re-updating function q_i, which decreases pi(t) in the event of an abundance of collision slots and increases pi(t) in the event of an abundance of vacant slots; the collision slots and vacant slots are measured by the station itself. Refer to Column 9, lines 6-19.

Referring to claim 30, Jacquet et al disclose that determining updated traffic category permission probabilities (pi(t)) occurs at irregular time intervals and is triggered by a network performance metric (observation of vacant or collision slot). Any observation or series of observations brings about an updating of $p_i(t)$. Refer to Column 9, lines 6-19.

Referring to claims 54, 55, 61 and 62, refer to the rejection of claim 12.

Referring to claim 56, 57 and 63, refer to the rejection of claim 14.

Referring to claim 58, refer to the rejection of claim 17.

Referring to claims 59, 60, 64 and 65, refer to the rejection of claims 18 and 19.

3.   Claim 13, 21, 22 and 29 are rejected under 35 U.S.C. 103(a) as being

unpatentable over U.S. Patent No. 5,517,501 to Jacquet et al U.S. Patent No. 6,157,627

to Olofsson et al, and in further view of U.S. Patent No. 6,614,799 to Gummalla et al.

Referring to claims 13 and 29, Jacquet et al do not disclose that the

system comprises a centralized controller, which assigns and updates the traffic

category permission probabilities.

Gummalla et al disclose in Figure 1 a centralized controller (CMTS 104) that

controls data transmission to cable modems 120. The CMTS 104 also specifies and

updates backoff window parameters for cable modems 120. Refer to Column 2, line 35

to Column 3, line 8 and Column 6, line 56 to Column 7, line 9. Therefore, it would have

been obvious to one of ordinary skill in the art at the time the invention was made to

include that the system comprises a centralized controller which assigns and updates

the traffic category permission probabilities, the motivation being in order to control and

coordinate data transmission among the communication units.

Referring to claim 21, Jacquet et al disclose that the contending for access step

comprises determining if a contending station can transmit and sending traffic from an

appropriate traffic category. Refer to Column 9, lines 37-67.

However, Jacquet et al do not disclose setting a backoff timer.

Gummalla et al disclose in Figure 1 wherein a plurality of cable modems 120

contend for channel access by choosing a backoff time from a backoff window. Refer to

Column 6, line 56 to Column 7, line 20. Therefore, it would have been obvious to one of

ordinary skill in the art at the time the invention was made to include setting a backoff

timer; the motivation being so that if an unit collides with another unit during packet transmission, it will set its timer to wait a certain number of contention slots before retransmitting the packet.

Referring to claim 22, Jacquet et al do not disclose that setting the backoff timer comprises generating a random number, X; calculating a backoff time based on the random number, X; and setting the backoff timer to the backoff time.

Gummalla et al disclose in Figure 1 wherein a plurality of cable modems 120 contend for channel access by choosing a backoff time from a backoff window. Setting the backoff timer comprises generating a random number, X (random number selected from a backoff window); calculating a backoff time based on the random number, X; and setting the backoff timer to the backoff time. Refer to Column 6, line 56 to Column 7, line 20. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include setting a backoff timer; the motivation being that setting the backoff timer comprises generating a random number, X; calculating a backoff time based on the random number, X; and setting the backoff timer to the backoff time. One would be motivated to do so since each of the colliding modems will independently pick a random number from the window so that the chances of more than one modem choosing the same random number is low, thereby minimizing collision.

Allowable Subject Matter

4.   Claims 20, 23-26 and 31 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

5.   Applicant's arguments filed April 3, 2006 have been fully considered but they are

not persuasive.

Referring to the argument that $p_i(t)$ does not refer to the traffic category (page 9,

lines 10-14): A series of quantities of probability $p_i(t)$ is maintained, equal in number to

the number of n of priority levels to be managed (i goes from 1 to n). Therefore, $p_i(t)$ is

a traffic category since it differentiates between the n different priorities of traffic. Refer

to Column 8, lines 20-28.

Referring to the argument that $g(t)$ is not the overall permission probability (page

9, lines 15-24), the office action does not cite $g(t)$ as the overall permission probability.

The office action cites an associated quantity $p_i(t)$ as the overall permission probability.

For a packet stored in the upstream buffer, its priority level i is associated with a

corresponding $p_i(t)$. Refer to Column 8, lines 37-41.

Conclusion

6.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christine Ng whose telephone number is (571) 272-3124. The examiner can normally be reached on M-F; 8:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on (571) 272-3155. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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May 30, 2006

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